REMARKS

Claims 1, 4-8 and 11-45 are pending in the present Application. Claims 5-7 and 11-43 have been withdrawn from consideration, Claims 1, 4, 8, and 45 have been amended, Claim 44 has been cancelled, and Claims 46 and 47 have been added, leaving Claims 1, 4-8, and 45-47 for consideration upon entry of the present Amendment.

Claims 1, 4, and 45 have been amended to add the limitation "corresponding to a G to A change at position 458 in the coding sequence of the optineurin gene of SEQ ID NO: 1, 3, or 5". Support for his amendment can be found in the Specification at least in Paragraph [0016].

Claim 1 has been amended to delete fragments of the optineurin gene and to include only SEQ ID NO:s 1, 3 and 5 and the coding sequences thereof. Support for this amendment can be found in the Specification in Paragraph [0016].

Claim 8 has been amended to use "consisting essentially of" regarding both mutant optineurin probes. Support for this amendment can be found in the Specification in Paragraph [0064]. By amending claim 8 to "consisting essentially of" the Applicants have limited Claim 8 to arrays comprising probes for mutant optineurin genes as specified in claim 8 and to other probes as suitable to detect glaucoma such as also to wild type optineurin probes to provide a control.

Claims 8 and 45 have been amended to include the phrase "to detect or sequence" for clarity.

Claims 45 has been amended to use "approximately" instead of "about" for consistency with the Specification.

Claim 46 has been added. Support for this new claim can be found in claim 1 and in the Specification in Paragraphs [0016] and [0037].

Claim 47 has been added. Support for this amendment can be found in the Specification in Paragraph [0064].

No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 1, 4, 8 and 44-45 stand rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 8, 44 and 45 stand rejected as allegedly indefinite for the recitation of "corresponding to a G to A change at position 458". Claim 44 has been cancelled. Claims 1, 8 and 45 have been amended to corresponding to a G to A change at position 458 in the coding sequence of the optineurin gene of SEQ ID NO: 1, 3, or 5. This amendment clarifies that position 458 refers to the coding sequence of the optineurin gene.

Claims 8 and 45 stand rejected for the use of the phrase "detect or sequence". For the sake of clarity, claims 8 and 45 have been amended to use the phrase "to detect or sequence".

Reconsideration and withdrawal of this rejection are respectfully requested.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 4, 8, and 44-45 stand rejected under 35 U.S.C. § 102(a) and 102(e), as allegedly anticipated by U.S. Publication No. 2001/0053519 to Fodor et al. Claims 1, 4, 8, and 44-45 also stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by U.S. Patent No. 5,474,796 to Brennan. Applicants respectfully traverse this rejection.

Fodor is generally directed nucleic acid sequences containing 10 or more nucleotides which can be utilized as a probe, as a primer for PCR or as a ligand. (paragraph [0003]) Fodor is further directed to nucleic probes containing 10 or more nucleotides attached to a solid support to form an array. (paragraph [0003])

Brennan is generally directed to an apparatus and methods for making arrays of functionalized binding sites on a support surface. (Abstract) Brennan also discloses a method of synthesizing every possible 10 mer oligonucleotide for use in the array. (Col. 9, ll. 49-55)

To anticipate a claim, a reference must disclose each and every element of the claim. *Lewmar Marine v. Varient Inc.*, 3 U.S.P.Q.2d 1766 (Fed. Cir. 1987).

Claim 1 has been amended to delete fragments of the optineurin gene and to include only the optineurin mutants of SEQ ID NO:s 1, 3 and 5 and the coding sequences thereof, thus obviating the rejection over Fodor and Brennan. Also, claim 44 has been cancelled.

In making the rejection, the Examiner states "The argument that Fodor does not teach a specific mutation is not found persuasive as this sets forth no added limitation to the claimed invention to distinguish from the nucleic acids of Fodor." (March 12, 2007 Office Action, p. 4) The Examiner makes similar statements regarding Brennan. Claim 8 has been amended to an array that "consisting essentially of" probes for mutant optineurin genes. By amending claim 8 to "consisting essentially of" the Applicants have limited Claim 8 to arrays comprising probes for mutant optineurin genes as specified in claim 8 and to other probes as suitable to detect glaucoma such as also to wild type optineurin probes to provide a control. Thus, claim 8 now specifies an array suitable for the detection of mutations in the optinuerin gene that can be used to screen for optineurin-associated glaucoma or of an optineurin-associated risk of glaucoma. In addition, claim 47 has been added to specify that the array also includes wild type optineurin probes. Arrays suitable for the detection of mutations in the optineurin gene are not taught by Fodor or Brennan.

In making the rejection, the Examiner also states that Fodor teaches every possible 10-mer nucleic acid and "the specification does not set forth the metes and bounds of the term 'about'." (March 12, 2007 Office Action, p. 3-4) The Examiner makes similar statements regarding Brennan. The Examiner interprets about 15 as broad enough to encompass 10.

Claim 45 included the phrase "about 15". Claim 45 has been amended to replace about with approximately for consistency with the Specification in Paragraph [037]. The Examiner alleges that "about 15" is so broad as to encompass about 10 nucleotides. Such an interpretation is, however, inconsistent with the Applicants' specification. In Paragraph 37, for example, "An "allele-specific oligonucleotide" (also referred to herein as an "allele-specific oligonucleotide probe") is an oligonucleotide of approximately 10-50 bases, preferably approximately 15-30 bases, preferably contiguous bases, that specifically hybridizes to the optineurin gene, and that contains an alteration associated with glaucoma or with increased risk of glaucoma." Thus, while "approximately 15" bases is not specifically defined in the Applicants' specification, it is clear that approximately 15 and approximately 10 are different. One of skill in the art, when reading paragraph 37 of the Applicant's Specification would understand that 10 is not within the scope of approximately 15. Thus, Fodor and Brennan do not teach an oligonucleotide that is within the scope of claim 45 and does not anticipate these claims.

To further distinguish the present claims from Fodor and Brennan, claims 46 has been added. The "about" has been removed from "about 15". Fodor and Brennan teach 10-mer oligonucleotides and not 15 to approximately 30-mers as claimed in claim 46.

For at least the foregoing reasons, reconsideration and withdrawal of these rejections under 35 U.S.C. § 102(a, e and b) are requested.

Claims 1, 4, and 44 stand rejected under 35 U.S.C. § 102(b), as allegedly anticipated by Genbank Accession number BE013065 (July 2000). Applicants respectfully traverse this rejection.

Genbank Accession number BE013065 contains a 17-mer fragment that comprises nucleotides 138-154 that are identical to nucleotides 451-467 of SEQ ID NO:1.

Claim 1 has been amended to delete fragments of the optineurin gene and to include only SEQ ID NO:s 1, 3 and 5 and the coding sequences thereof, thus obviating the rejection of Claims 1 and 4 over BE013065. Claim 44 has been cancelled.

For at least the foregoing reasons, reconsideration and withdrawal of these rejections under 35 U.S.C. § 102(b) are requested.

Claim Rejections Under 35 U.S.C. § 103

Claim 8 and newly added claim 45 stand rejected under 35 U.S.C. § 103, as allegedly unpatentable over Genbank Accession number BE013065, in view of U.S. Patent No. 5,474,796 to Brennan. Applicants respectfully traverse this rejection.

In making the rejection, the Examiner states that it would have been obvious to attach a nucleic acid as in Genbank Accession number BE013065 to an array because "each of Fodor and Brennan teach that arrays of probes can be used in a number of nucleic acid based applications including target detection and identification." (March 12, 2007 Office Action, p. 8)

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of success, determined from

the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

While there appears to be overlap between the BE013065 sequence and the claimed optineurin mutant sequence, BE013065 does not provide the motivation to provide the overlapping sequence in the form of an array. BE013065 discloses MARC 1PIG Sus scrofa cDNA sequences. No biological function is associated with this disclosed sequence. Thus, while one could attach the polynucleotide of BE013065 to an array, there is no motivation to do so absent some particular function of the target. Also, with regard to the specific 17-mer sequence identified by the Examiner, there is no teaching or disclosure in BE013065 that this particular sequence would be useful in identifying the disclosed polynucleotide.

Regarding claims 45 and 46, these claim are directed to arrays of oligonucleotides having a length of approximately 15 to 30 nucleotides or 15 to approximately 30 nucleotides. Brennan specifically teaches arrays of 10-mer oligonucleotides. Neither BE013065 nor Brennan provides the motivation to specifically select oligonucleotides of approximately 15 to 30 nucleotides or 15 to approximately 30 nucleotides.

In addition, claim 47 has been added to further define the invention. Claim 47 is directed to an array comprising both mutant and wild type optineurin oligonucleotides. BE013065 does not teach wild type optineurin oligonucleotides and thus is missing an element of the present claims. While Brennan teaches a plurality of 10-mer oligonucleotides, it provides no motivation to form an array that consists essentially of mutant and wild type optineurin oligonucleotides. Thus, BE013065 and Brennan do not render the present claims obvious.

For at least the foregoing reasons, reconsideration and withdrawal of these rejections under 35 U.S.C. § 103(a) are requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the objection(s) and rejection(s) and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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